

Laboratory for Stem Cell Research,
Department of Health Science and
Technology, Aalborg University,
Denmark



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Expertise in:

- Established protocols for Isolation, characterization and expansion of adipose derived stem cells for translational therapies: [\(1\)](#); [\(2\)](#); [\(3\)](#); including cardiac cell-based therapy: [\(4\)](#); [\(5\)](#);
- Enhancement of growth and pro-regenerative properties of adipose derived and other types of stem cells by controlling the oxygen concentration [\(6\)](#); [\(7\)](#); [\(8\)](#); [\(9\)](#)
- Mechanobiological studies of smooth and skeletal muscle cells for tissue engineering applications: [\(10\)](#); [\(11\)](#)
- Assessment of cell interactions with nanostructured biomaterials *in vitro* and *in vivo*: [\(12\)](#); [\(13\)](#); [\(14\)](#); [\(15\)](#)

Relevant research facilities and instrumentation:

- Hypoxic cell growth facility (Biospherix XVivo workstation)
- 126 m² GMP classified laboratory with capacity for large-scale, clinically compliant stem cell expansion
- Standard and custom cell functional assays (wound scratch, migration, angiogenesis, patch-clamp)
- Bioreactor for mechanical stimulation of cultured cells (Flexcell)
- Fluorescent and confocal microscopy, with capability of time-lapse imaging
- Access to pre-clinical animal facilities, with capability from rodents to minipigs.

Expected benefits and activities during participation in BIONECA:

- Interaction with research groups using mesenchymal stem cells for the treatment of cardiac or neural diseases, to discuss protocols and explore potential joint preclinical or clinical trials
- Interaction with groups that investigate paracrine effects of mesenchymal stem cells, to share experiences, exchange protocols and discuss potential cooperation initiatives to investigate their angiogenic and anti-inflammatory properties in the framework of neural/cardiac-regenerative applications
- Cooperation with groups in the field of biomaterial synthesis toward the development of novel biomaterials that support regeneration of electrically active tissues
- Cooperation with groups developing materials at the nano and microscale toward the development of platforms to investigate stem cell microenvironments that favor cardiac and/or neural differentiation
- To gain knowledge about novel methods for 3D imaging of tissue engineered scaffolds, image processing and analysis.
- Would like to participate in consortia for new projects` applications

Foreseen maximum contribution: in WG1